

NEOTROPICAL PYRALID MOTHS TRANSFERRED FROM
ANERASTIINAE (AUCTORUM) TO PHYCITINAE

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Abstract.—Eight named species of neotropical pyralid moths are transferred from Anerastiinae (Auctorum) to Phycitinae. Of these, *Coenochroa monomacula* Dyar and *Metacrateria miasticta* Hampson are synonymized under *Coenochroa californiella* Ragonot. The other six species are redescribed, and the genitalia, wings, and heads illustrated.

In my revision (Shaffer, 1968) of the North American fauna of the polyphyletic Anerastiinae (Auctorum) I transferred *Anerastia* and six other genera to the Phycitinae and applied the name Peoriinae Hulst, 1890 to the natural group formed by the remaining genera. A similar study (Shaffer, 1976) of the Neotropical fauna covered only the Peoriinae, thereby leaving in limbo 11 specific names properly belonging to the Phycitinae. The present paper treats eight of these names. Types of the remaining three species (*Rhinaphe endonephele* Hampson, 1918; *R. ignetincta* Hampson, 1918; and *Anerastia hemirhodella* Hampson, 1901) are in the British Museum (Natural History), need to be reexamined, and will be covered in a future paper.

Of the eight specific names dealt with herein, only two can be given proper generic assignment, *Coenochroa monomacula* Dyar and *Metacrateria miasticta* Hampson are synonymized under *Coenochroa californiella* Ragonot. Four others, *Saluria jordanella* Ragonot, *Anerastia mictochroella* Ragonot, *Euzophera conquistador* Dyar, and *E. mabes* Dyar are known only from females, all but *mabes* from unique specimens. *E. climosa* was described from seven specimens; but, as Heinrich (1956) has pointed out, the type series consists of more than one species. *E. tintilla* was described from a single male.

Four of the five Dyar species were originally assigned to *Euzophera*, and later referred to the Anerastiinae by Heinrich (1956) on the basis of the reduced tongue. Though none properly belong to *Euzophera*, and while their generic affinities are unclear, they are nonetheless phycitines. This paper is presented in the hope that it will lead to the discovery of additional material of these species.

The ISCC-NBS Color-Name Charts were used in describing colors. In a few instances, as with very small markings, only very general color designations could be given. A Nikon filar ocular micrometer was used with a Nikon S-Ke II microscope to measure minute structures such as teeth and spines on the bursa, ductus bursae, and vesica. These measurements are somewhat imprecise as few such structures ever lie exactly in the plane of focus and can be measured flat.

Museum collections are referred to by the following acronyms: BMNH, British

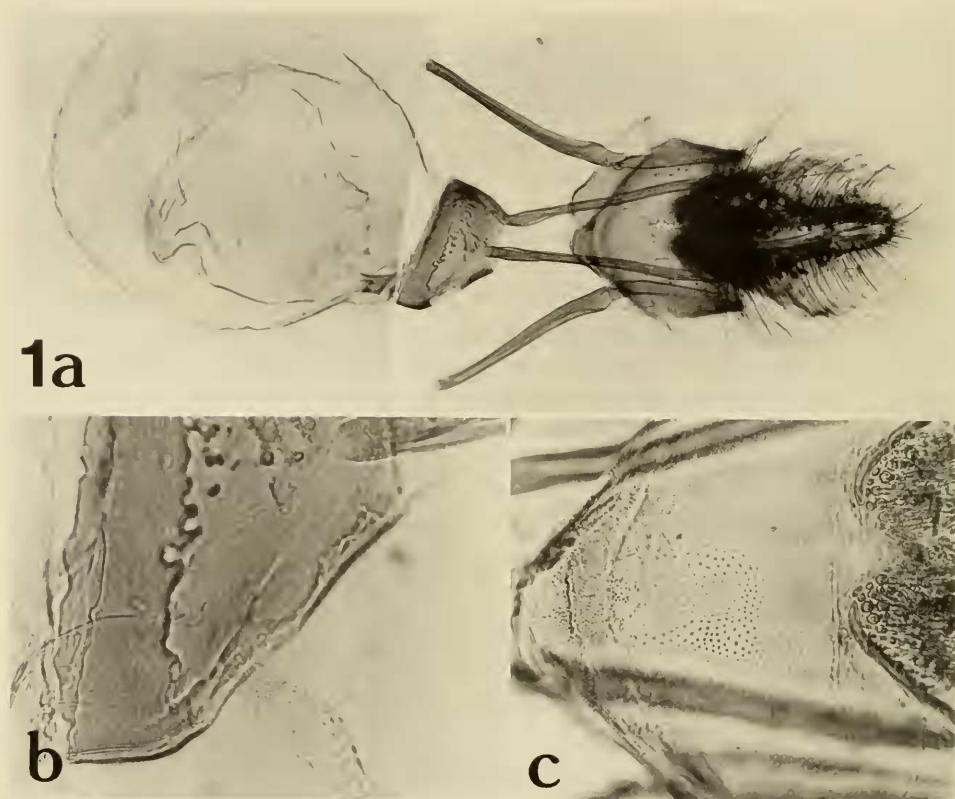


Fig. 1. *Saluria jordanella*, holotype. a, Female genitalia; b, enlargement showing origin of ductus seminalis; c, enlargement of ostium.

Museum (Natural History), London; MNHN, Muséum National d'Histoire Naturelle, Paris; and USNM, National Museum of Natural History, Washington.

I thank Dr. P. Viette of the Muséum National d'Histoire Naturelle in Paris for the loan of specimens of *S. jordanella* and *A. mictochroella*.

Saluria jordanella Ragonot

Figs. 1, 9, 15

Saluria jordanella Ragonot, 1888: 44. Hampson in Ragonot, 1901: 360, plate 37, fig. 20.

Description. — Frons light orange yellow. Maxillary palpi minute. Tongue greatly reduced, clothed with white scales. Female antennae filiform, cilia about one-half as long as segment width. Eye diameter 0.6 mm. Ocelli normally developed, conical, black with clear centers. Vertex moderate orange yellow. Occiput laterally moderate orange yellow, streaked with white; dorsally white, the white extending around chaetosemata. Patagia and tegulae moderate orange yellow.

Forewing radius 11 mm; basal line orange yellow; antemedial line orange yellow mixed with brown anterior to A_1 fold; both lines oblique, extending posterolaterally. Ground between basal and antemedial lines yellowish white with a few

scattered brown scales. Poorly defined white discal spot at outer margin of cell; brown transverse posterior line half way between cell and outer wing margin, this line moderate orange yellow posterior to Cu_2 . Ground distal to antemedial line a mixture of white and orange yellow with a few scattered brown scales, orange yellow color forming poorly defined bar in anterior half of cell and extending to costal margin. Eleven veins; R_2 from cell very near to R_{3+5} ; R_3 stalked with R_5 about half its length. M_2 short-stalked with M_3 , from lower outer angle of cell; Cu_1 from near the angle. Hindwing with seven veins; M_{2+3} fused, stalked with Cu_1 about half its length; from lower outer angle of cell; Cu_2 from near the angle.

Male genitalia unknown.

Female genitalia with ovipositor broadly lobed, densely setose. Anterior apophyses nearly straight; posterior straight, 1.1 times as long as anterior. Eighth segment collar narrow laterally, with shallowly emarginate dorsal extensions. Ostium sclerotized, broadly triangular, 1.8 times as wide as long; ventral surface with curved, transverse subapical sclerotized band; dorsal surface with numerous ventrally directed minute setae, each approximately 10–15 μm long. Ductus bursae short, membranous. Bursa round, posterior one-sixth forming a dorsoventrally shallow collar, dorsally convex, and irregularly sclerotized, ventrally concave and weakly sclerotized. Signum absent, bursa surface smooth. Ductus seminalis from left side of bursa collar, slender, membranous.

Holotype.—♀, labeled: "TYPE" [red label]; "Goya corrientes" [Argentina]; "Saluria jordanella Rag. type orig. pl. XXXVII f. 20"; "1901 coll. E. L. Ragonot Muséum Paris"; "♀ genitalia on slide 1182 J. C. Shaffer." [MNHN].

The frons is partly denuded and only the basal segments of the labial palpi and a few segments of each antennal shaft are preserved.

The female genitalia are phycitine and differ markedly from those of *Saluria*, but proper generic placement must await association with male specimens. The species is known only from the holotype.

Anerastia mictochroella Ragonot

Figs. 2, 10, 16

Anerastia mictochroella Ragonot: 1888; 49; 1901: 404, plate 40, fig. 10.

Description.—Frons conical, mostly pale orange yellow with lesser number of white scales. Labial palpi porrect; basal segments white, second and third a mixture of white and pale orange yellow scales, many of the latter being brown distally. Tongue minute. Female antennae filiform. Eye diameter 0.68 mm. Ocelli normally developed, conical, black. Vertex pale orange yellow to white. Occiput brown and pale orange yellow laterally, brown dorsally. Patagia and tegulae light orange yellow.

Forewing radius 12.0 mm; basal and antemedial lines extending obliquely outward toward posterior wing margin, separated by brown color posterior to radius; basal line light orange yellow, separated from thorax by white spot posterior to A_2 ; ground between antemedial and transverse posterior lines forming conspicuous trapezoid, nearly uniformly brown between radius and A_1 fold, a complex mixture of white, brown, and light orange yellow posterior to A_1 fold. Discal spot white, with a few brown scales posteriorly; a line of brown and light orange yellow connecting spot with transverse posterior line. Transverse posterior line white,

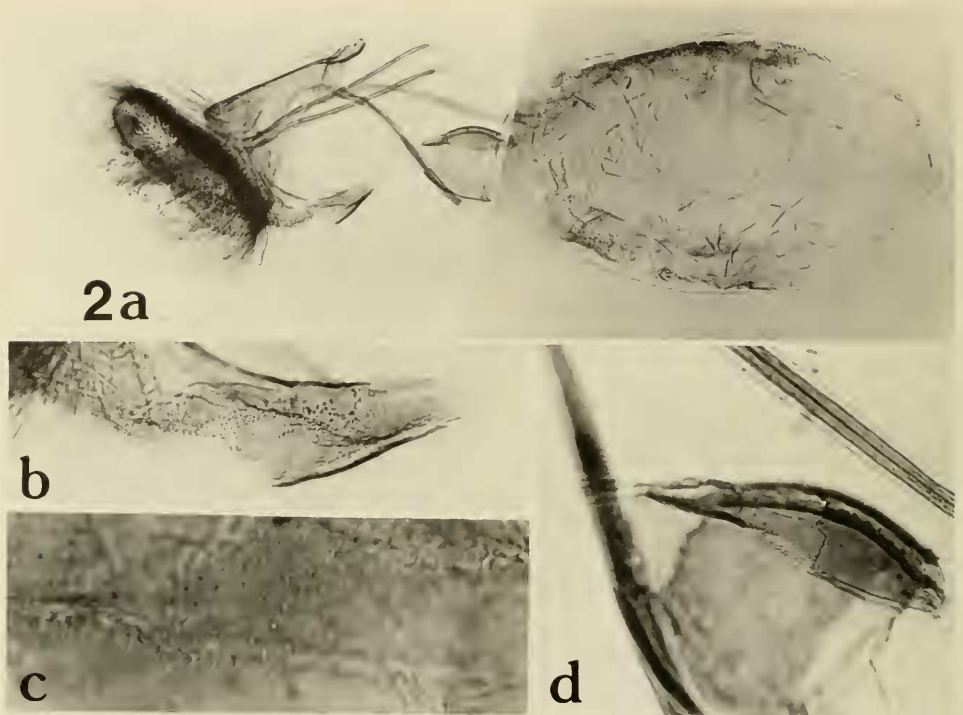


Fig. 2. *Anerastia mictochroella*, holotype. a, Female genitalia; b, ostium; c, ostium spines; d, origin of ductus seminalis.

narrow; ground pale orange yellow distal to transverse posterior line. Fringe with narrow brown lines separated by white. Ten veins; R_2 well separated from origin of R_{3+5} ; R_3 stalked with R_5 about half its length; from near upper outer angle of cell; M_{2+3} fused, from lower outer angle; Cu_1 from near the angle. Hindwing with 7 veins; M_{2+3} fused, stalked with Cu_1 about $\frac{1}{3}$ its length, from lower outer angle of cell; Cu_2 from very near the angle.

Male genitalia unknown.

Female genitalia with ovipositor broadly lobed, densely setose; anterior apophyses curved ventrally; posterior nearly straight, $1.2\times$ as long as anterior. Eighth segment collar longest middorsally, strongly angled laterally, incomplete ventrally. Ostium ventrally sclerotized as triangular plate, dorsally membranous and with numerous minute ventrally directed spines, each about $8-10\ \mu\text{m}$ long. Ductus bursae short, membranous. Bursa elliptical, neck a well sclerotized collar, dorso-ventrally very shallow, strongly convex dorsally, concave ventrally; surface smooth. Ductus seminalis from left side of sclerotized bursa collar; slender, membranous.

Holotype. —♀, labeled: "TYPE" [red label]; "Goya Corr. Rep. Arg." [Argentina: Corrientes]; "*Anerastia mictochroella* Rag. type orig, pl. XL fig. 10"; "1901 coll. E. L. Ragonot Muséum Paris"; "♀ genitalia on slide 1186 J. C. Shaffer." [MNHN].

Maxillary palpi are not visible on the holotype, and are either minute or absent.

The female genitalia are phycitine, but do not match those of *Anerastia*. Proper generic placement must await association with male specimens. The species is known only from the holotype.



Fig. 3. *Coenochroa californiella*, holotype of *miasticta* Hampson, female genitalia.

***Coenochroa californiella* Ragonot**

Figs. 3, 4, 11, 17

Coenochroa californiella Ragonot, 1887: 20. Shaffer, 1968: 61-64 (complete synonymy and description).

Coenochroa monomacula Dyar, 1914: 348. NEW SYNONYMY.

Metacrateria miasticta Hampson, 1918: 79. NEW SYNONYMY.

Type material examined.—*miasticta*, holotype ♀, labeled: "Type"; "Presidio, Mexico. Forrer."; "Metacrateria miasticta, type ♀. Hmpsn"; "Godman-Salvin Coll. 1904.—1. B.C.A. Lep. Het. Platytes interlineata Zell."; "Pyralidae Brit. Mus. Slide No. 10917." [BMNH]. *monomacula*, holotype ♂, labeled: "Cabima Pan May 20. .11 August Busck" [Panama]; "Coenochroa monomacula Type Dyar" [red handwritten label]; "Type No. 16433 U.S.N.M." [red label]; "Genitalia Slide By Jay Shaffer USNM 55450" [remounted by JCS]. [USNM]. *monomacula* paratypes.—♀, labeled: "La Chorrere May 12 Pan Aug. Busck"; "Genitalia Slide By Jay Shaffer USNM 55442"; ♀, labeled: "La Chorrera May 12 Pan Aug. Busck" [Panama]; "Genitalia Slide By Jay Shaffer USNM 55443." [USNM].

Both paratypes are females, not one male and one female as listed by Dyar.

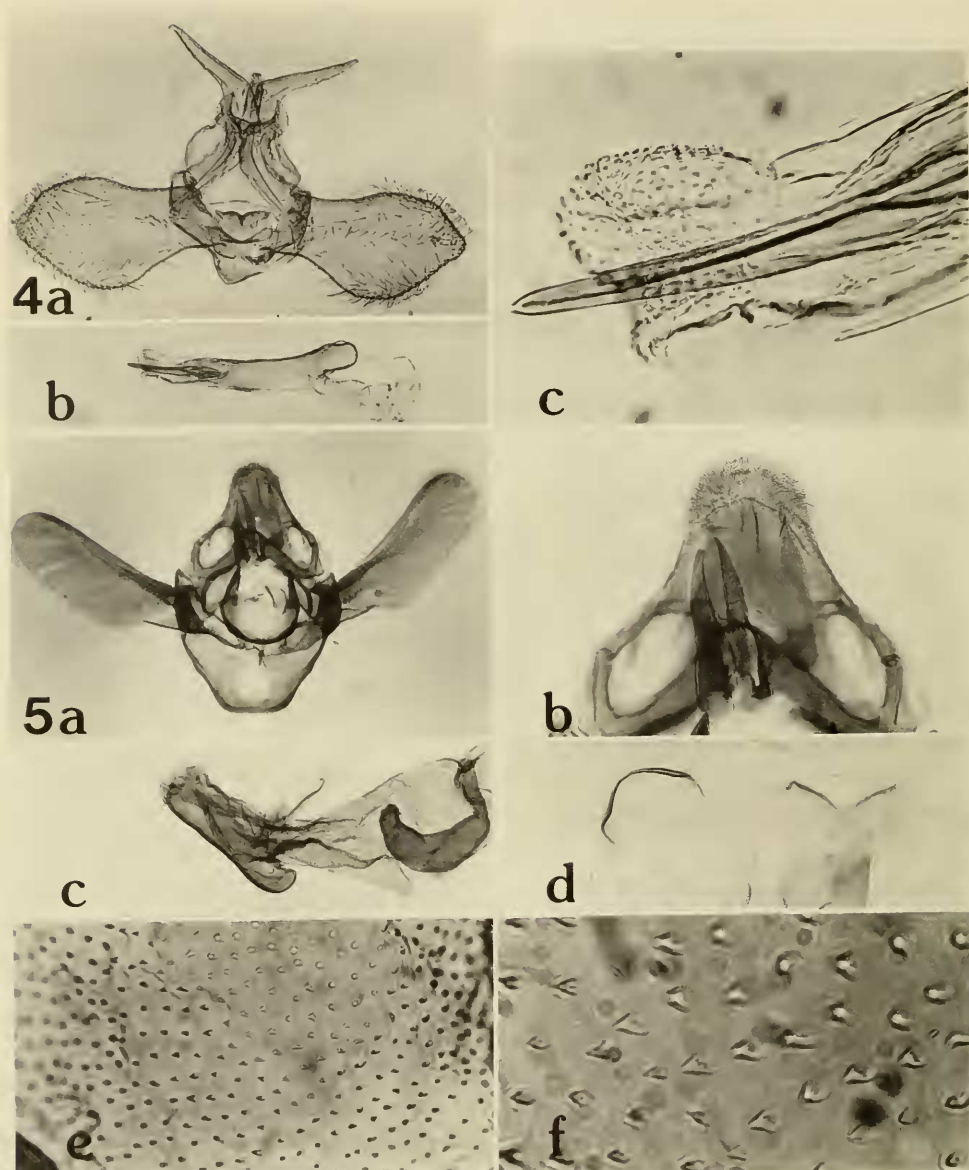
The species is widely distributed in North America from British Columbia to southern California and east to Kansas and central Texas. I have few records from Mexico, but many from the United States, including the border area from San Diego, California to Brownsville, Texas. Morphologically the types of *miasticta* and *monomacula* closely match other material of *californiella*, and I consider all these specimens to be conspecific.

***Euzophera climosa* Dyar**

Figs. 6, 19, 22

Euzophera climosa Dyar, 1914: 335. Heinrich, 1956: 315.

Description.—Labial palpi obliquely ascending, $2.0\times$ as long as eye diameter. Maxillary palpi short, cylindrical, not reaching end of frons. Tongue greatly reduced. Male antennae with shaft sublaminar, basal segments unmodified, cilia



Figs. 4-5. 4a, *Coenochroa californiella*, holotype of *monomacula* Dyar, male genitalia; b, aedeagus; c, aedeagus tip. 5a, *Euzophera tintilla*, holotype, male genitalia; b, uncus and gnathos; c, aedeagus; d, eighth abdominal segment; e-f, enlargements of vesica teeth.

densely set, each about one-seventh as long as segment width. Eye diameter 0.6 mm. Ocelli minute, black with clear centers.

Forewing radius (holotype) 6.25 mm; ground almost uniformly moderate yellowish brown, just perceptibly lighter in broad band on distal $\frac{1}{7}$ of wing. Costal band yellowish white, posterior margin convex, extending to middle of cell, terminating before wing base and wing apex. Eleven veins; R_2 short stalked with

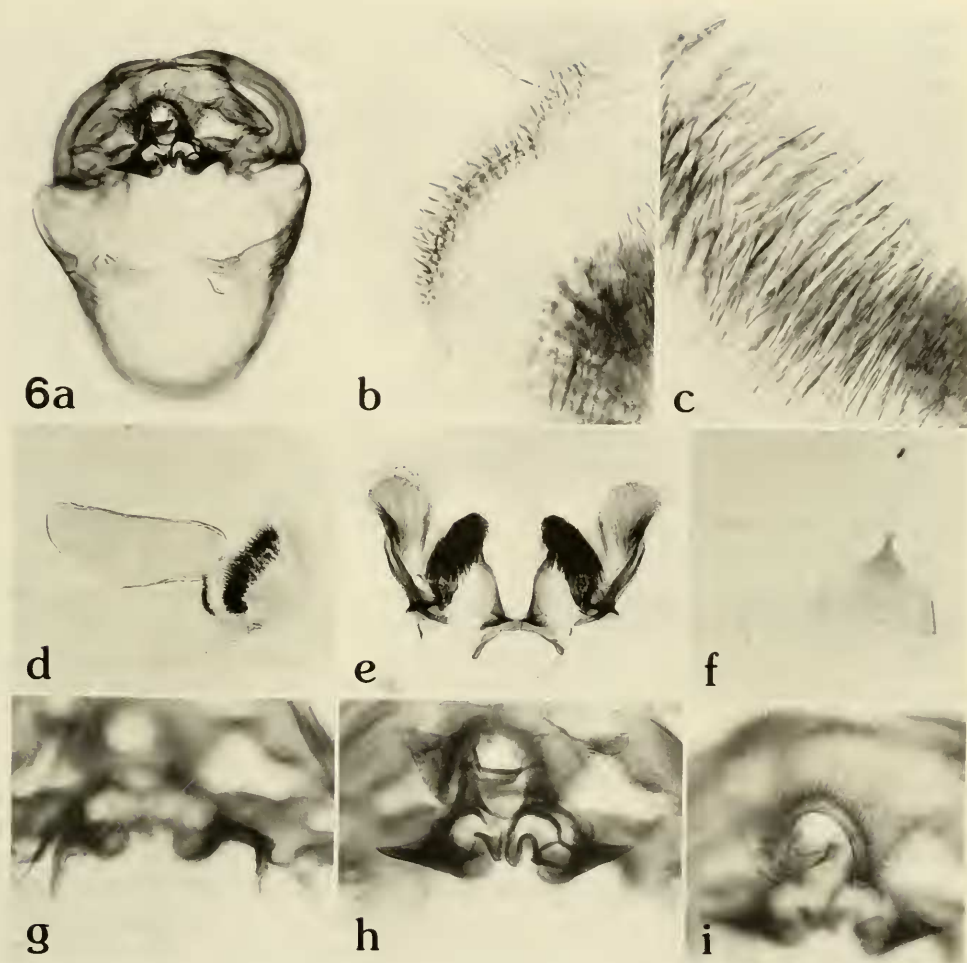


Fig. 6. *Euzophera climosa*, holotype. a, Male genitalia; b–c, cornuti; d, aedeagus; e, valvae (reduced); f, eighth abdominal segment; g, gnathos medial process, anterior arms; h, gnathos medial process, lateral arms; i, apex of uncus.

R_{3+5} ; R_3 stalked with R_5 for about $\frac{2}{3}$ its length, from before upper outer angle of cell; M_2 short stalked with M_3 , from lower outer angle. Hindwing uniformly grayish yellowish brown. Seven veins; Sc and Rs long stalked, forking near wing margin; M_{2+3} fused, short stalked with Cu_1 , from lower outer angle; Cu_2 from well before the angle.

Male genitalia with uncus scoop shaped, posterior margin a smooth U-shaped ring; dorsal surface finely pubescent. Gnathos with lateral arms short, broad, transversely directed; apical process bilobed, posteriorly bearing pair of broad-based, laterally directed spines, anteriorly bearing slender laterally directed arms, each angled 90° ventrally near its distal end. Vinculum broadly rounded, $1.25 \times$ as broad as long. Valve each with hairy pad $2.75 \times$ as long as wide, extending ventro-distally from base of costa; ventral margin of pad slightly concave, dorsal margin slightly convex; distal end of pad protruding from ventral margin of valve

giving valve bilobed aspect. Aedeagus $2.5\times$ as long as maximum width, 0.9 mm long, broadest medially; vesica with one large and one much smaller patch of numerous sclerotized blades. Blades up to about 120 micrometers long in large patch, up to about 25 micrometers long in small patch. Vesica also bearing widely scattered minute triangular cusps, each about 10 micrometers wide at base. Eighth segment hair tufts absent.

Female genitalia unknown.

Holotype.— δ , labeled: "March 15.31:12"; "Rio Trinidad Pan" [Panama]; "A Busck coll"; "Type No. 16389 U.S.N.M." [red label]; "Euzophera climosa Type Dyar" [red handwritten label]; " δ Genitalia Slide, 12·May·1934 C.H. #2127"; "Genitalia Slide By Jay Shaffer USNM 55449" [remounted by JCS]. [USNM].

Conspecific paratype.— δ , labeled: "Rio Trinidad Mar .12 Pan" [Panama]; "A Busck coll"; " δ Genitalia Slide, 21·May·1934 C.H. #2137"; "Genitalia Slide By Carl Heinrich USNM 55451." [USNM].

Other material examined.— δ , Tumatumari, Potaro River, Guyana, June 28, 1927, genitalia slide USNM 55452; δ , St. Jean, Maroni, French Guiana, genitalia slide USNM 55453. [USNM].

E. climosa was described from three males and four females. Of the two male paratypes only one is conspecific with the holotype. The female paratypes represent more than one species, and at present it is not possible to determine which, if any, are of the same species as the holotype. The species shows affinities with *Laetilia*, but is not congeneric and is best left in *Euzophera* until *Laetilia* and its relatives are revised.

Euzophera tintilla Dyar

Figs. 5, 12, 18

Euzophera tintilla Dyar, 1914: 334. Heinrich, 1956: 315.

Description.—Frons oblique, pale orange yellow. Labial palpi obliquely ascending, slender, 1.6 times as long as eye diameter; all surfaces pale orange yellow with numerous scattered dark-brown scales, these forming broad subapical band on third segment. Maxillary palpi cylindrical; short, just reaching anterior margin of eye; yellowish white. Tongue minute. Male antenna with scape pale orange yellow on all sides; shaft filiform, lacking basal modifications, finely ciliate, cilia about one-third as long as segment width. Eye diameter 0.9 mm. Ocelli normally developed, conical, black with clear centers. Vertex pale orange yellow. Occiput pale orange yellow dorsally; same laterally, but with black spot behind eye. Patagia and tegulae pale orange yellow with scattered light-brown scales.

Forewing radius 9.5 mm; ground pale orange yellow with diffuse yellowish pink spot posterior to cell between antemedial and transverse posterior lines. Antemedial line prominent, black, strongly curved distally between costa and A_2 , reflexed distally posterior to A_2 . Transverse posterior line black, nearly straight, bent distally beyond M_{2+3} fork. Black discal spot at lower outer angle of cell, narrowly extended anteriorly along closing vein of cell. Terminal line of black spots between the veins. Eleven veins; R_2 free from cell; R_{3+4} stalked with R_5 about half length of R_5 ; M_{2+3} short stalked, from lower outer angle of cell; Cu_1 from near the angle. Hindwing with seven veins; Sc and Rs long stalked, forking near wing margin; M_{2+3} fused, short stalked with Cu_1 , from lower outer angle of cell; Cu_2 from well before the angle.

Procoxae pale orange yellow, black at base and apex. All tarsi brown, each segment pale orange yellow apically. Mesotibia pale orange yellow with black band two-thirds toward apex.

Male genitalia with uncus tapering posteriorly, apical margin broadly rounded, naked; dorsal surface densely setose. Gnathos with lateral arms strongly curved; apical process bilobed with pair of long posterior processes, each gradually tapering to a point. Transtilla incomplete, forming pair of narrow curved bars. Juxta U-shaped. Vinculum broad, truncate, about 1.2 times as broad as long. Aedeagus somewhat flattened; cornuti absent; vesica with numerous minute triangular teeth, each about 7 micrometers wide basally. Eighth segment lacking special modification.

Female genitalia unknown.

Holotype.—♂, labeled: "Porto Bello 4/17-24 Pan" [Panama]; "A Busck 1912 coll"; "Type No. 16386 U.S.N.M." [red label]; "Euzophera tintilla Type Dyar" [red handwritten label]; "fig"; "♂ Genitalia Slide, 11 May 1934. C.H. #2123"; "Genitalia Slide By Jay Shaffer USNM 55448" [remounted by JCS]. [USNM].

The species was described from a single male specimen. In Heinrich (1956) it keys out to venation group II, division A, and shares many features in common with genera 131 (*Laetilia*) through 151 (*Cactobrosis*), but does not fit well into any existing phycitine genus. I believe that it is best left in *Euzophera* until proper placement can be made.

Euzophera conquistador Dyar

Figs. 7, 14, 21

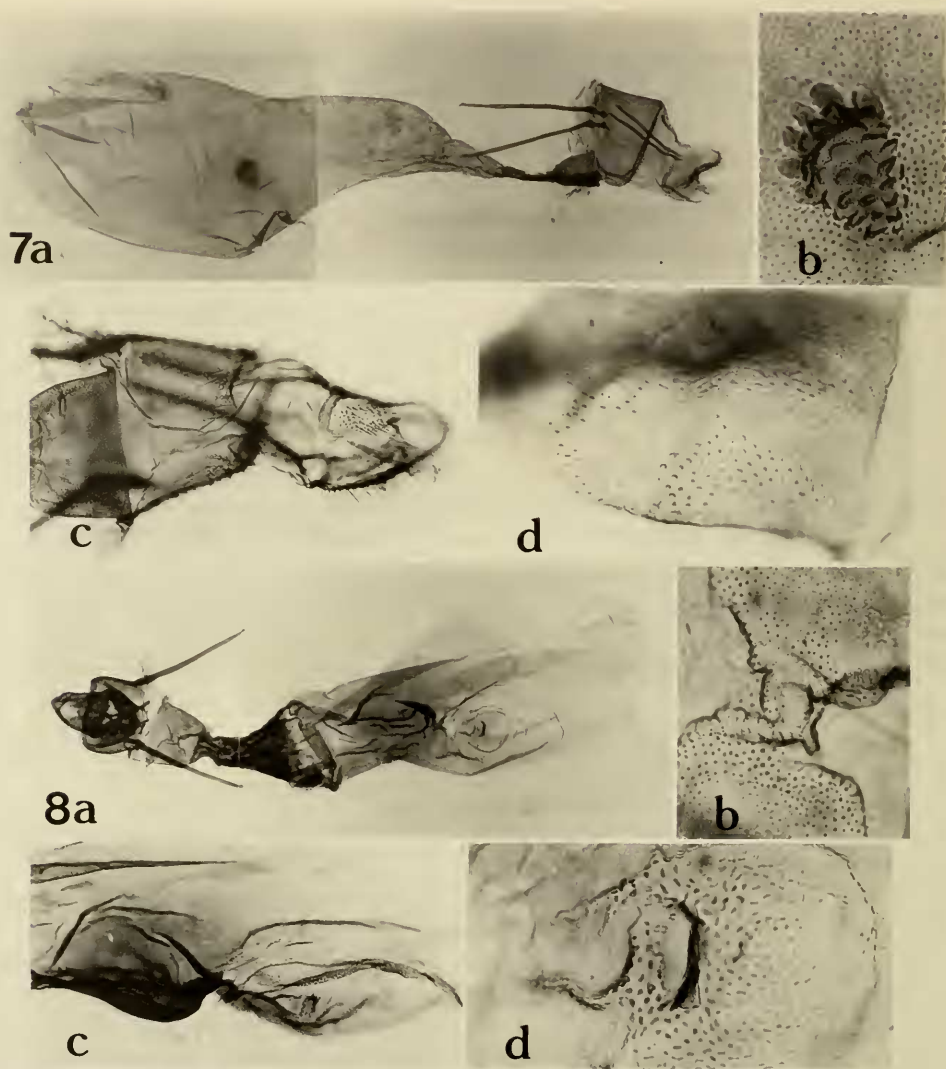
Euzophera conquistador Dyar, 1914: 335. Heinrich, 1956: 315.

Description.—Frons purplish brown. Labial palpi porrect, slender, 3.0 times as long as eye diameter. Maxillary palpi short, cylindrical, nearly reaching end of frons. Tongue greatly reduced. Female antennae filiform. Eye diameter 0.64 mm. Ocelli moderately well developed, conical, black. Patagia and tegulae a mixture of pale orange yellow and purplish brown.

Forewing radius 9.5 mm; ground purplish brown, indistinct broad antemedial band of pale orange yellow directed diagonally outward between costa and A_1 fold, reflexed inward posterior to A_1 fold. Small, indistinct discal spot of pale orange yellow over closing vein of cell. Narrow subterminal band of pale orange yellow parallel to outer wing margin. Eleven veins; R_2 free from cell; R_{3+4} stalked with R_5 for about half its length, from well before outer angle of cell; M_1 from the angle; M_2 stalked with M_3 for about one-third its length, from lower outer angle; Cu_1 from well before the angle. Hindwing with seven veins; Sc and Rs long stalked; M_{2+3} fused, very short stalked with Cu_1 , from lower outer angle; Cu_2 from well before the angle.

Male genitalia unknown.

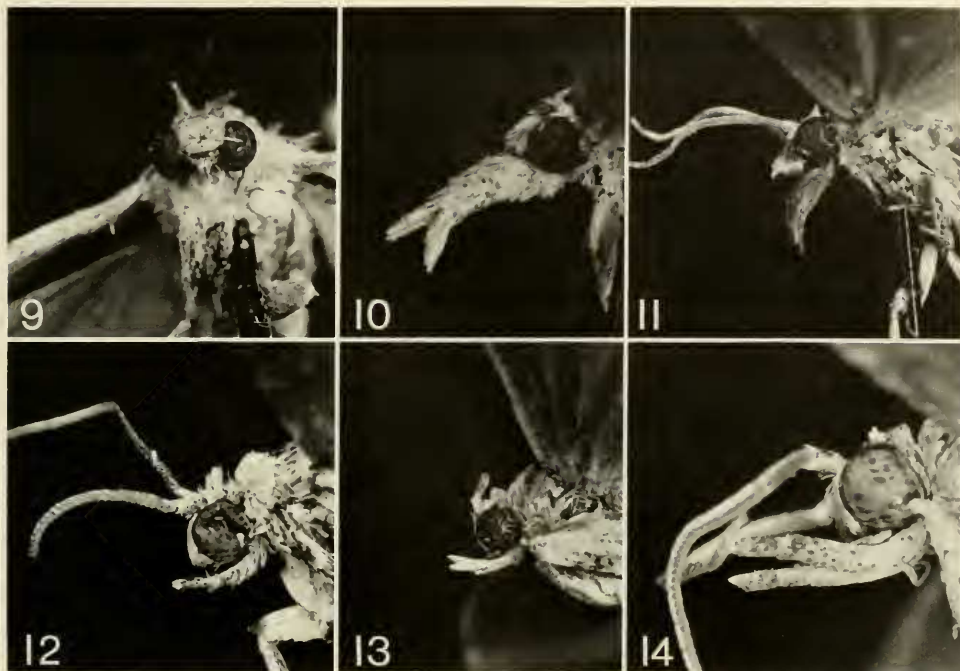
Female genitalia with ovipositor finely pubescent; anterior apophyses straight, $1.7\times$ as long as posterior; posterior straight, slender. Eighth segment collar wedge-shaped in lateral view, entire surface very finely setose, posterior margin bearing long setae. Ostium a moderately well sclerotized collar, inner surface set with numerous very fine short spines. Ductus bursae smooth, gradually broadening into bursa. Bursa bearing a single signum, in form of rounded pear-shaped plate 0.20 mm wide by 0.22 mm long, bearing about three dozen inwardly directed



Figs. 7-8. 7a, *Euzophera conquistador*, holotype, female genitalia; b, signum; c, ventral view of ostium and ovipositor; d, ostium spines. 8a, *Euzophera mabes*, holotype, female genitalia; b, ostium; c, signum and origin of ductus seminalis; d, signum.

scales, these largest and most crowded on side opposite ductus seminalis origin. Bursa surface set with minute, subelliptical scales, these largest and most prominent around signum (here about $7 \times 12 \mu\text{m}$); smaller, subtriangular, and inconspicuous elsewhere (here about $5 \mu\text{m}$ wide), ending abruptly at posterior end of bursa. Ductus seminalis from posterior half of bursa, slender, funnel-shaped at junction with bursa.

Holotype.—♀, labeled: "Cabima Pan May 16-31 .11 August Busck" [Panama]; "Type No. 16390 U.S.N.M." [red label]; "Euzophera conquistador Type Dyar" [red handwritten label]; "♀ Genitalia Slide, 12·May·1934. C.H. #2129"; "Genitalia Slide By Jay Shaffer USNM 55447" [remounted by JCS]. [USNM].



Figs. 9–14. 9, *Saluria jordanella*, holotype. 10, *Anerastia mictochroella*, holotype. 11, *Coenochroa californiella*, holotype of *monomacula* Dyar. 12, *Euzophera tintilla*, holotype. 13, *Euzophera mabes*, holotype. 14, *Euzophera conquistador*, holotype.

The species was described from a single female. Whatever its original state it is now in less than perfect condition, and perhaps fresh specimens would show more detailed wing markings than I have described. The genitalia are phycitine, but proper generic placement is uncertain.

***Euzophera mabes* Dyar**

Figs. 8, 13, 20

Euzophera mabes Dyar, 1914: 334. Heinrich, 1956: 315.

Description.—Labial palpi obliquely ascending, slender, 2.0 times as long as eye diameter. Maxillary palpi short, cylindrical. Tongue greatly reduced. Female antennae sublaminar, lacking basal modifications, finely and densely ciliate, cilia length about one-fifth segment width. Eye diameter 0.6 mm. Ocelli normally developed, elliptical, black with clear centers. Patagia light orange. Tegulae purplish gray.

Forewing radius 7.5 mm; ground light yellowish brown distally to brownish orange base on posterior half of wing. Strong dark brown antemedial band; broadest in cell, sharply angled distally at A_1 fold. Narrow brown transverse posterior line, parallel to orange-brown subterminal line. Terminal line of brown spots between veins. Eleven veins; R_2 free from cell; R_{3+4} stalked with R_5 for about half its length, from near upper outer angle of cell; M_1 from the angle; M_2 stalked with M_3 for about $\frac{2}{5}$ its length, from lower outer angle; Cu_1 from before the angle. Hindwing brown, darker apically. Seven veins; Sc and Rs long stalked; M_{2+3}



fused, short stalked with Cu_1 , from lower outer angle of cell; Cu_2 from well before the angle.

Male genitalia unknown.

Female genitalia with ovipositor broadly lobed, bearing fine scattered hairs. Eighth segment moderately well sclerotized; posterior margin reflexed inward and deeply emarginate ventrally with sides connected midventrally by narrow bridge at anterior margin of segment. Ostium broad, dorsal surface moderately well sclerotized laterally, ostium membranous elsewhere; inner surface set with numerous minute sharp spines, each about 5–7 μm long. Ductus bursae formed of longitudinal folds of thickened membrane. Bursa with small elliptical plate-like signum, 80 by 30 μm , bearing 3 unequal rounded laminar projections. Bursa surface set with numerous minute elliptical scales, each about 5 by 7 μm wide and bearing longitudinal furrows giving digitate appearance; scales orientated with rounded ends of digits directed away from signum; scales best developed near signum, smaller and less evident in anterior and posterior regions of bursa. Ductus seminalis from bursa near and posterior to signum; very slender, funnel shaped at junction with bursa.

Holotype.—♀, labeled: "Taboga Isl Pan Febr. 12 August Busck" [Panama]; "Type No. 16387 U.S.N.M." [red label]; "Euzophera mabes Type Dyar" [red handwritten label]; "fig"; "♀ Genitalia Slide, 16 May 1934 C.H. #2135"; "Genitalia Slide by Jay Shaffer USNM 55446" [remounted by JCS]. [USNM].

The other specimen listed by Dyar (USNM genitalia slide 55454), a female from Porta Bello, Panama, appears not to be conspecific with the holotype, but matches a Rio Trinidad female (USNM genitalia slide 55455) paratype from the *E. climosa* series.

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Figs. 15–22. 15, *Saluria jordanella*, holotype. 16, *Anerastia mictochroella*, holotype. 17, *Coenochroa californiella*, holotype of *monomacula* Dyar. 18, *Euzophera tintilla*, holotype. 19, *Euzophera climosa*, holotype. 20, *Euzophera mabes*, holotype. 21, *Euzophera conquistador*, holotype. 22, *Euzophera climosa*, holotype.